Remarks:

In the present paper, Claims 1-18 are pending. Claims 1-6, 8-9, 11-15, 17 and 18 have been amended. Claims 10 and 16 have been canceled. Support for the claim amendments herein can be found, for example, at paragraphs 32, 33 and 38 of applicant's published patent application, U.S. Pat. Pub. No. 2005/0066289. No new matter is believed to have been added by the amendments herein.

35 U.S.C. §101

Claim 18 stands rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. In making the rejection, the Examiner argues that claim 18 recites nothing but the physical characteristics of a form of energy that is non-statutory because the specification defines a computer-usable medium as including a signal[1]. In this regard, the applicants would like to respectfully point out that in the previous amendment[2], claim 18 was further limited to recite a "... computer-usable *storage* medium having computer readable program code embodied therewith...".

The recitation of computer readable program code that is embodied on a computer readable storage medium is within the requirements of 35 U.S.C. §101 and the U.S.P.T.O. Interim Guidelines for Patent Subject Matter Eligibility. Further, the recitation of computer readable program code configured to display the tree map visualization on a display device recites a concrete, practical and tangible result, and thus defines patent eligible subject matter under 35 U.S.C. §101.

In view of the amendments and clarifying comments herein, the applicants believe that claim 18 is within the requirements of 35 U.S.C. §101 and the U.S.P.T.O. Interim Guidelines for Patent Subject Matter Eligibility. Accordingly, the applicants request that the rejection to claim 18 under 35 U.S.C. §101 be withdrawn.

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[1] citing the Interim Guidelines for Patent Subject Matter Eligibility, page 55.
[2] filed in response to the Office action mailed July 10, 2007.

35 U.S.C. §102(a)

Claims 1, 3, 4, 11, 12, 15, 17 and 18 stand rejected under 35 U.S.C. §102(a) as being unpatentable over U.S. Pat. Pub. No. 2003/0158846 to Ikehata (hereinafter, '*Ikehata*'). According to the M.P.E.P. §2131, to establish a *prima facie* case of anticipation, the prior art reference must teach or suggest all the claim limitations. It is the applicants' position that *Ikehata* does not support the rejections to the claims as amended herein, thus a *prima facie* case of anticipation has not been established. Accordingly, the applicants respectfully request that the rejections are withdrawn.

With respect to claim 1, as amended herein, the applicants assert that *Ikehata* fails to teach or suggest at least:

> prioritizing the data in the data set so as to associate a priority with respective elements of the data in the data set, where the associated priorities designate a desired sequence to the respective elements of the data set … predefining a pattern that reflects a desired display pattern for the associated priority of the elements of the data in the data set … generating the tree map visualization that positions within a display space, a combination of bounding boxes corresponding to the elements of the data in the data set and void regions where no information is displayed, such that each bounding box in the tree map visualization is arranged in priority order based upon the sequence designated by the priority associated with its corresponding element and the predefined pattern and the void regions fill in the remainder of the display space where no bounding box is present …

In the office action, the Examiner argues that *Ikehata* teaches prioritizing the data based upon class value (content of the data) or section value (order of the data)[3]. However, as noted above, claim 1 has been amended herein to clarify that the generated tree map visualization positions within a display space, a combination of bounding boxes … such that each bounding box in the tree map visualization is arranged in priority order based upon the sequence designated by the priority associated with its corresponding element and the predefined pattern as set out in greater detail herein.

[3] see Office action, page 5, citing *Ikehata*, para. 14, 19, 21, 55-57, 60-61, 77-82, 89, Figs. 6 and 4A/4B.

Ikehata discloses treemap techniques that implement conventional space filling visualizations for hierarchical structures, which do so in a manner that displays either high class values or low class values of the data represented by the visualization in as square a shape as possible, i.e., where the aspect ratio of height to width for a selected rectangle is close to 1[4]. In particular, "strip regions" are defined corresponding to the entire statistical data and rectangles representing individual values of the statistical data are arranged in each strip region of the visualization. For each strip, a predetermined one rectangle is selected and its shape is adjusted to approximate a square and each or the remaining rectangles form the remainder of the strip region[5].

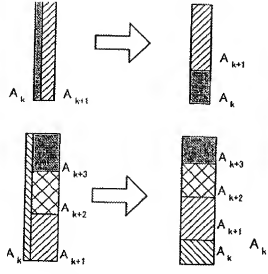
Notably, the rectangles are not arranged in priority order based upon the sequence designated by the priority associated with its corresponding element and the predefined pattern, as recited in claim 1 *as amended herein*. Rather, the primary constraint imposed by the treemap techniques of *Ikehata* is that adjacent data elements are represented by adjacent boxes in the visualization, which, as will be described in greater detail below, does not preserve both priority order based upon the sequence designated by the priority associated with its corresponding element ***and*** the predefined pattern.

As best illustrated in Fig. 2, *Ikehata* uses a rearrangement processing section 22 for merging and rearranging previously sorted classes such that the shape of a selected one of the rectangles corresponding to classes arranged into each strip become as near square as possible. Further, a turn back processing section 23 is utilized to rearrange sequences of arranged classes in a turn back chain type after all the classes are arranged by the class arranging section 21[6].

As noted above, for each rectangle in a strip, a predetermined one rectangle is selected and its shape is adjusted to approximate a square and each or the remaining rectangles form the remainder of the strip region[7]. To accomplish this primary goal, each time a rectangle is considered by the rearrangement processing section 22, a determination is made as to whether

[4] See for example, *Ikehata Abstract, paragraph 16, 49.*
[5] See for example, *Ikehata,* paragraph 51-52
[6] See for example, *Ikehata,* paragraphs 66-67; Fig. 2
[7] See for example, *Ikehata,* paragraph 51-52

that rectangle should be merged into the current strip or be repositioned to another strip, e.g., based upon aspect ratio. Moreover, the rearrangement processing section 22 may merge two strip regions into one strip region and may also rearrange strip regions as two strip regions that form corresponding classes are changed[8]. It is only after all of the merging and reorganizing that the strip regions are assembled into the treemap visualization. This merging is illustrated for example, in Fig. 4 and merging and rearranging is illustrated in Fig. 5, which are reproduced in relevant part below for the convenience of the Examiner.



Figs 4 A and B

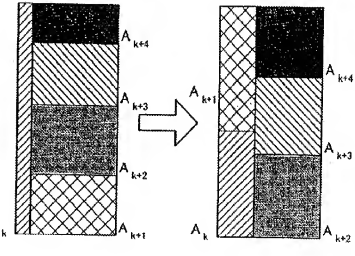


Fig. 5

As can be seen above, the sequence designated by the priority associated with its corresponding element and/or the predefined pattern order of the rectangles is altered when a particular view is prepared for display. For example, in Fig. 5 (to the right, above), the rectangles are split and reconfigured within each strip region such that one rectangle (A_{k+4}) in this example, has an aspect ratio approximating 1 (square) and A_{k+1}, which was at the bottom of the second strip is relocated to a top position within the first strip.

In this regard, the rectangles representing corresponding adjacent statistical data are positioned so as to be adjacent to each other. However, the sequence and pattern of that data is

[8] See for example, *Ikehata*, paragraph 78

deliberately modified based upon a primary rule to optimize for aspect ratio of either high class or low class values first.

Moreover, *Ikehata* teaches that *each time* classes are arranged by the class arranging section 21, the re-arrangement processing section performs its rearrange/merge operations. As such, the location of displayed rectangles would be potentially different for different views of the data because the rectangles are reshaped, repositioned and/or merged into strips according to an algorithm that is based upon on aspect ratio and adjacency but not based upon pattern and priority in a manner as recited in claim 1 as amended herein.

For example, the locations of the rectangles can change under any circumstance where the visualization encompasses either different high class values or low class values which are to have an aspect ratio close to 1. Thus, if an operator zooms in on a region of the visualization or performs some other operation that changes the field of view of the display (regardless of whether the actual data values were changed or not), the locations of the rectangles may change so as to preserve the rule that makes the aspect ratio of one rectangle in each strip close to 1. Alternatively, if the values of the underlying data change, then the locations of the rectangles in the visualization will likely change, again to preserve the rule that one rectangle in each strip has an aspect ratio close to 1.

Moreover, with the invention claimed in claim 1, the bounding boxes are arranged in priority order. Thus, it may not be possible to completely utilize the display area of the tree map. Accordingly, claim 1 is *amended herein* to clarify that the generated tree map visualization positions within a display space, a combination of bounding boxes … and void regions where no information is displayed, such that … the void regions fill in the remainder of the display space where no bounding box is present.

In the Office action, the Examiner takes official notice that it would be obvious to display items having the same or similar relative priorities in a data strip, in order to more clearly convey a measure of absolute vs. relative priority and data size of the data objects with respect to each

other, even if this creates some void or unused regions and that such is not in contravention of the fundamental techniques of data visualization[9].

The applicants respectfully traverse the Examiner's official notice and assert that such alleged factual assertions are not properly officially noticed and/or are not properly based upon common knowledge. In particular, the applicants believe that the Examiner has not asserted a technical line of reasoning underlying the decision to take such notice that is clear and unmistakable. Moreover, the notice taken by the Examiner is in direct contradiction to tree map and other space filling visualizations in general. Therefore, if the Examiner maintains this assertion, the applicants respectfully request that the Examiner present evidence to support the official notice taken[10].

In support of applicants traversal, the applicants note that treemaps in general, and the teaching of treemap techniques in *Ikehata* deliberately utilize a space-filling visualization approach and thus do not utilize voids in the display area. For example, in *Ikehata*, the area of each rectangle is computed as a percentage of the entire area (A_{all})[11]. That is, each rectangle A is selected to have an area such that the sum of all of the areas is the total area of the display space. Moreover, the width of each rectangle is computed as a function of the area of that rectangle, the overall display area (A_{all}) and the overall width (W_{all}) of the display area[12]. See also, *Ikehata*, Figs. 8-10, 14-16, which illustrate space-filling tree map visualizations.

Moreover, as discussed in greater detail above, *Ikehata* utilizes a rearranging process to perform width and height adjustments of the rectangles in each strip to optimize for aspect ratio of only one of the rectangles per each strip. As such, not only is there no teaching or suggestion of utilizing voids to fill in a display space as a result of positioning bounding boxes in the tree map visualization in priority order based upon the sequence designated by the priority associated with its corresponding element and the predefined pattern, but *Ikehata* deliberately teaches against this arrangement. For example, the merging and re-arranging functions that are

[9] See Office action mailed October 09, 2007, page 7, second full paragraph.
[10] M.P.E.P. §2144.03
[11] *Ikehata*, equation 1, paragraph 68.
[12] *Ikehata*, equation 2, paragraph 70.

iteratively repeated by the techniques of *Ikehata* deliberately prevent voids as an inherent part of adjusting aspect ratios.

In view of the amendments and clarifying comments herein, the applicants respectfully request that the rejections to claim 1and the claims that depend there from 35 U.S.C. §103, be withdrawn.

Claims 11, 17 and 18 have been amended herein to recite elements analogous to those set out in claim 1. As such, the arguments above with reference to claim 1 apply by analogy to claims 11, 17 and 18.

In view of the amendments and clarifying comments herein, the applicants respectfully request that the rejections to claims 11, 17, 18 and the claims that depend there from 35 U.S.C. §102, be withdrawn.

35 U.S.C. §103

Claims 2, 3, 7, 10, 13, 14 and 16 stand rejected under 35 U.S.C. §103 as being unpatentable over *Ikehata* . Moreover, claim 6 was rejected under 35 U.S.C. §103(a) as unpatentable over *Ikehata* in view of U.S. Pat. App. Pub. No. 2002/0091684 to Nomiyama, (hereinafter, '*Nomiyama*'). Additionally, claims 5; and 8-9 were rejected under 35 U.S.C. §103(a) as unpatentable over *Ikehata* in view of U.S. Pat. App. Pub. No. 2004/0070627 to Shahine, (hereinafter, '*Shahine*').

According to the M.P.E.P. §706.02(j), to establish a *prima facie* case of obviousness, the prior art reference must teach or suggest all the claim limitations. It is the applicants' position that the art does not support the rejections to the claims as amended herein, thus a *prima facie* case of obviousness has not been established. Accordingly, the applicants respectfully request that the rejections are withdrawn.

In this regard, claims 10 and 16 have been canceled. The remaining rejected claims are believed to be patentable by virtue of being dependent from a base claim which the applicants believe to be patentable over the cited art as set out more fully herein.

Conclusion

For all of the above reasons, the applicants respectfully submit that the above claims recite allowable subject matter. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,

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